#8 4/6/00

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Date of Facsimile Transmission: April 6, 2000

David G. Ryser, Reg. No.: 36,407

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	M. Eric Taylor *et al.*
Serial No.:	09/337,830
Filed:	June 22, 1999
Title:	ALLOY FOR BATTERY GRIDS
Group Art Unit:	1745
Examiner:	T. Dove
Attorney Docket No.:	510553.90940

DECLARATION

Dear Sir:

1. I am a named inventor of the above-identified application.

2. I have once again reviewed the castability study at pages 18-20 of the above-identified application, and agree with the comments of others skilled in the battery field (noted at page 19, lines 4-12 of the application) that Pb/Ca/Sn/Ag alloys have a tendency for hot cracking because Ag increases the freezing range of the alloys.

3. I know that cast battery grids having cracks and similar casting defects are undesirable, and in the worse cases not acceptable for use in a battery.

4. I had others acting pursuant to my supervision prepare the following lead alloys having a nominal calcium content of .04%, tin content of .8%, and the following silver content:

Alloy A: 0.0120% Silver
Alloy B: 0.0130% Silver
Alloy C: 0.0144% Silver
Alloy D: 0.0174% Silver
Alloy E: 0.0197% Silver
Alloy F: 0.0220% Silver
Alloy G: 0.0295% Silver

5. My patent attorney has informed me that Alloys A, B, C, D, and E all fall within the scope of the independent claims of the present application and that Alloys F and G are outside of the scope of the claims of the present invention but within the scope of the disclosure of U.S. Patent No. 5,691,087 to Rao *et al.* which is believed to be the closest prior art (and was cited by the Examiner).

6. Each of these battery alloys was gravity cast using state-of-the-art book mold gravity casting technology by others acting pursuant to my supervision.

7. After casting, the grids were allowed to age harden.

8. The age hardened grids were then rolled over a cylinder of 25 millimeter diameter and examined for cracks after the bending.

9. The percentage of grids with cracks after bending was tabulated for each of Alloys A-G.

10. The results of the grid cracking tests were plotted on the attached graph entitled, "GRID CRACKING STUDY - 0.8% TIN" ("the 0.8% Tin graph").

11. Upon analysis of the 0.8% Tin graph, I believe that at silver levels below 0.0220%, there is an unexpected decrease in the cracking of the alloy when casted. These results further demonstrate the improved castability of the alloy of the present invention which was also shown in the castability study at pages 18-20 of the above-identified application.

12. I also had others acting pursuant to my supervision prepare the following second set of lead alloys having a nominal calcium content of .04%, tin content of 1.1%, and the following silver content:

Alloy H: 0.0072% Silver
Alloy I: 0.0102% Silver
Alloy J: 0.0125% Silver
Alloy K: 0.0152% Silver
Alloy L: 0.0174% Silver
Alloy M: 0.0194% Silver
Alloy N: 0.0228% Silver

13. My patent attorney has informed me that Alloys H, I, J, K, L, and M all fall within the scope of the independent claims of the present application and that Alloy N is outside of the scope of the claims of the present invention but within the scope of the disclosure of U.S. Patent No. 5,874,186 to Rao *et al.* which is believed to be the second closest prior art (and was cited by the Examiner).

14. Each of these battery alloys was gravity cast using state-of-the-art book mold gravity casting technology by others acting pursuant to my supervision.

15. After casting, the grids were allowed to age harden.

16. The age hardened grids were then rolled over a cylinder of 50 millimeter diameter and examined for cracks after the bending.

17. The percentage of grids with cracks after bending was tabulated for each of Alloys H-N.

18. The results of the grid cracking tests were plotted on the attached graph entitled, "GRID CRACKING STUDY - 1.1% TIN" ("the 1.1% Tin graph").

19. Upon analysis of the 1.1% Tin graph, I believe that at silver levels below 0.0228%, there is an unexpected decrease in the cracking of the alloy when casted. These results further demonstrate the improved castability of the alloy of the present invention which was also shown in the castability study at pages 18-20 of the above-identified application.

I declare that all statements are made herein of my own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the above-identified application or any patent issuing thereon.

Respectfully submitted,

Dated: 4/6/00

By: M. Eric Taylor

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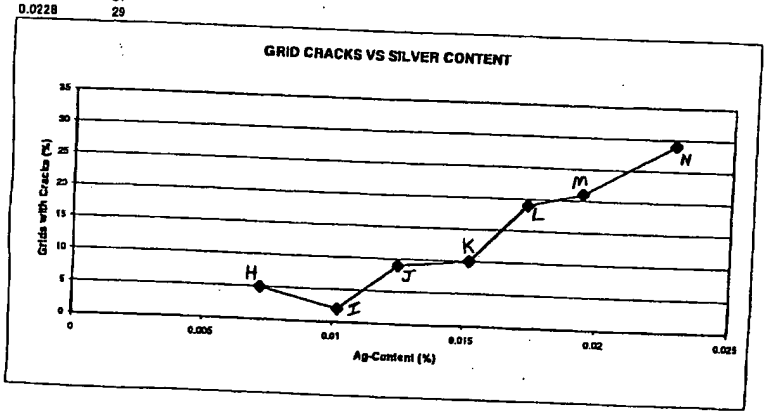
GRID CRACKING STUDY - 1.1% TIN

All alloys contain fixed 1.1% Sn

Ag-Content (ppm)	Grids with Cracks (%)
0.0072	5
0.0102	2
0.0125	9
0.0152	10
0.0174	19
0.0194	21
0.0228	29



GRID CRACKING STUDY - 0.8% TIN

All alloys contain fixed 0.8% Sn

Ag-Content (ppm)	Grids with Cracks(%)
120	6.0
130	12.0
144	18.0
174	32.0
197	38.0
220	44.0
295	43.4